Cal/EPA

Department of
Toxic Substances
Control

1011 N. Grandview Ave.
Glendale, CA 91201

MEMORANDUM

Pete Wilson
Governor

Peter M. Rooney
Secretary
for Environmental
Protection

TO: File

FROM: Penny Nakashima
Southern California Permitting Branch

DATE: September 4, 1997

SUBJECT: **WHITTAKER BERMITE CLOSURE OVERSIGHT REPORT**
JUNE 30, 1996 THROUGH JUNE 30, 1997
EPA I.D. NUMBER CAD 064 573 108

Attached is the Whittaker Bermite Closure Oversight Report (COR) for the 1996/1997 FY. The COR describes the soil vapor monitoring and extraction program and ground water monitoring at the former Area 317 Surface Impoundment.

Whittaker Corporation, Bermite Division
22116 W. Soledad Canyon Road, Santa Clarita, CA
EPA ID# CAD 064 573 108

Closure Oversight Report
June, 1997

Introduction

On November 21, 1994, the Department of Toxic Substances Control (DTSC) entered into a consent order with Whittaker Corporation, Bermite Division (Whittaker) to investigate, characterize and remediate any contamination found at the facility. The consent order also requires that Whittaker continue to implement the Closure Plan approved by DTSC's Permitting Branch for the former Area 317 Surface Impoundment, the one remaining RCRA unit which has not been certified closed. Whittaker proposed amendments to the vapor monitoring system for the former Area 317 Surface Impoundment in the Draft Remedial Investigation Workplan. The changes approved by Site Mitigation Branch are included in the Final Remedial Investigation Workplan (RI Workplan) dated August 29, 1995. The changes include the installation of two nested vapor probes which will be used to further determine the vertical extent of soil contamination.

This oversight report documents the closure-related activities performed from June 30, 1996 through June 30, 1997 at the former Area 317 Surface Impoundment.

Closure Activities for June 30, 1996 - June 30, 1997

Soil Vapor Monitoring and Extraction Program

The soil vapor extraction system (VES) has been operating since 1989. Since May 1996, the VES has removed from 90 to 300 pounds of VOCs per month. Qualitative data is collected monthly with an organic vapor analyzer. On January 31, 1997, DTSC provided comments to Whittaker on the methodology used to collect samples[1], recommending a change to a closed loop system with a sampling port. Whittaker, through their consultant Acton-Mickelson-Environmental (AME), refused to change their vapor sampling methodology. Further action is needed to assure implementation of the DTSC recommendations. In May 1996, an AME

---

[1]The June Closure Oversight Report documented the methodology for collection of vapor samples observed on April 25, 1996, as inserting the vapor line and OVA probe tip into an open top plastic bottle.

vapor sample was sent to an analytical laboratory and the following results reported:

TCE	113.0 ppmv
PCE	5.9 ppmv

A replicate sample had similar results (TCE 110.0 ppmv and PCE 6.0 ppmv).

Whittaker is planning to modify the operation of the VES to a "pulsed" mode rather than continuous operation. In the Remedial Investigation (RI) Workplan, Whittaker specified that the VES would be shut off then started up again to measure rebound when concentrations reached an asymptotic low. Whittaker believes that they are at this point and provided as their rationale the following: 1) the mass extraction rate of 7 to 8 pounds VOCs per day; 2) consistent vapor monitoring results of 90 ppmv for the last three months (DTSC has data for only one month); and 3) the vapor probe readings with the OVA have decreased to an asymptotic low. Use of an asymptotic criterion carries with it an implicit assumption that the mass removal is relatively low and has reached a point of diminishing return. This is not the situation at Area 317 where mass removal is still significant and indicates that substantial contamination remains present, even after eight years of cleanup activity, and that the cleanup performance standards have not been met for this regulated unit. It is inappropriate to apply the asymptotic criterion at this time.

The mass extraction rate per day is an average since measurements are calculated monthly, DTSC has received analytical data for one month, and the vapor sample collection methodology may be diluting the VOCs with ambient air and under-representing the VOCS actually present in the subsurface. The vapor sample collection methodology needs to be changed.

Groundwater Monitoring

Whittaker continues to monitor ground water on a quarterly basis as specified in the approved Closure Plan. Although there have been minor detections of VOCs, the groundwater monitoring program has remained in detection monitoring. The last samples for which data has been submitted to DTSC were collected in March, 1997.

There have been historical detections of TCE in the ground water at the former Area 317 Surface Impoundment. A sample collected from well MW-5 on March 20, 1996, was reported as

containing TCE at 0.6 µg/l, just above the 0.5 µg/l detection limit. When the well was resampled on April 8, 1996, the reported TCE concentration was below the detection limit. The sample obtained from groundwater monitoring well MW-5 on September 12, 1996, contained TCE at 0.6 µg/l. Samples collected from the well in October and December of 1996 were below the detection limit of 0.5 µg/l. Because the levels of TCE were below detection limits each time the well was resampled after each of the anomalies, Whittaker did not propose any changes to the groundwater monitoring program.

On June 26, 1996, DTSC staff observed the quarterly groundwater sampling activities at wells MW-1 and MW-3. Purging was begun on June 24, 1996, at a rate of approximately 1 gallon per minute, with purge water discharged directly to the ground surface. Whittaker personnel stated that this disposal method had been approved by DTSC. The observed method of sample collection for VOCs was of concern because the water was allowed to free-fall into the VOA vial and the vials were topped off by filling the cap with the water and transferring it into the vial before capping. This sampling technique can result in degassing of VOCs that might be present in the water. Following DTSC's concerns being relayed verbally to Whittaker on June 26, 1996, and on October 17, 1996, AME, on Whittaker's behalf, notified DTSC that they would begin implementing the ground water sampling methodology communicated to Whittaker by DTSC. However, the water quality sampling and analysis plan (WQSAP) has not been revised yet. DTSC has not yet observed the revised VOC sampling procedures since Whittaker continues to fail to provide sufficient advance notice prior to quarterly monitoring being performed.

In April and May 1997, the Department of Health Services (DHS) sampled municipal drinking water wells adjacent to Whittaker and detected concentrations of perchlorate[2], above the DHS provisional action level of 18 ppb. The elevated perchlorate concentrations were detected in one well to the west of the site and one well to the northwest of the site. As a result, Whittaker has added perchlorate to the list of analytes but has not revised the WQSAP accordingly.

On June 26, 1997, DTSC and DHS staff observed perchlorate sampling activities and collected split samples for analysis of

---

[2]Ammonium perchlorate is a component of solid rocket propellant; its use and release at the Whittaker Bermite site has been documented.

perchlorate from all monitoring wells at Area 317. During the collection of groundwater samples it was noted that the monitoring wells are equipped with piston type pumps. These positive displacement pumps are reportedly set in the blank casing portion of the wells with "stinger" pipes reaching down a short distance into the screened interval of the well. Water is drawn up the "stinger" pipe through a check valve in the pump by action of a "sucker" rod which extends hundreds of feet from the pump to the surface. The up and down motion of the "sucker" rod has a throw of about six inches which means that the 500-foot plus column of water is comprised of six inch "lifts" brought through the check valve. This raises the question of effectively pressurizing the sample at the pump through creation of the water column and then depressurizing it at the sampling port and the impact on any VOCs originally present in the pumped water. There is clear opportunity for turbulence to occur at the check valve, even when in perfect condition, and along the 500 plus feet of rod which moves constantly through the column of sampled water. Whittaker Bermite personnel indicated that the check valve in one of the wells (MW-1) was currently "leaking"---meaning that some of the water in the column had passed through the valve more than once, having leaked back and been lifted again. This is a concern from the perspective of turbulence effects on VOCs and the likelihood of biasing the analytical results. The sampled water is brought up to the surface in a pipe with the "sucker" rod running through it. Even with only six inches of throw, this rod is likely to agitate the water before the sample is obtained at the surface. At each well head, the lifted water is transmitted through a tee and along a short horizontal section of pipe to an inverted L-shaped riser section of pipe where it is discharged through a hose bib. The sampling port is tapped into the short horizontal section. The up and down action of the sucker rod produces an intermittent pulsing of discharged water. It is likely that upper end of the system provides another opportunity for turbulence as the water pulsates back and forth at the riser. Temporarily replacing the existing stainless horizontal and inverted-U pipe sections with clear plastic pipe having the same configuration should be done on one of the wells and direct observation made of the behavior of the pumped water at the various flow rates utilized. It is recommended that this method of obtaining the samples be re-considered and another approach taken.

Whittaker personnel stated that during original construction of MW-3, an upgradient monitoring well, the casing collapsed at approximately 520 feet bgs, with first water encountered at approximately 480 feet bgs. A centrifugal pump without capability of varying the flow rate was installed in MW-3. MW-1,

an upgradient well reportedly has a leaking check valve. Whittaker personnel also described the purging process as extending over a

24-hour period which may be excessive given the overall direction in the hydrologic literature to reduce purging.

Analytical results from the June 26, 1997 monitoring event for perchlorate are as follows:

Monitoring Well	Laboratory	Concentration
MW-10	HML	5 µg/l
	DHS	ND
	CLS (Rancho Cordova)	10 µg/l
MW-Bldg 69	HML	34 µg/l
	DHS	17 µg/l
	CLS	17 µg/l
All other MW	All labs	ND

MW-10 is immediately downgradient of the former Area 317 Surface Impoundment in the site interior, while MW-Bldg 69 is located to the north, near the entrance to the site. It is noted that perchlorate is not subject to the potential degassing problems previously discussed relative to VOCs. Therefore, it is concluded that discharge of ammonium perchlorate has occurred to ground water underlying the regulated unit and that VOC discharge is also likely to have occurred. This is supported by a few small VOC "hits". These data need to be considered in the context that historical use of the regulated unit ceased long before the perchlorate was analyzed at the near-field monitoring wells---today's analyses probably do not represent the full extent of the original perchlorate discharge---and that the historically pumped samples may be biased towards non-detect of VOCs. Moreover, neither the lateral nor vertical distribution of possible contamination have been examined at the regulated unit nor have hydrological parameters such as flow rate been evaluated.

Closure-related Submittals

Quarterly Ground Water Monitoring Report Number 33 was submitted October 12, 1996. It contains a significant inconsistency. The report stated that the ground water quality parameters were within the tolerance limits, but sodium was shown as having exceeded tolerance limits for the last ten consecutive quarters. Moreover, Whittaker has proposed to cease collecting

additional samples for analysis of the background water quality parameters, which is required in the Area 317 monitoring plan, providing as rationale that no other ground water quality parameter concentrations have been impacted. AME states in the report that analysis of the parameters was consistent with historical data (23rd quarterly sampling event) from upgradient monitoring wells MW-1 and MW-3.

Review of the groundwater quality parameters reported in June 1995, March 1996, September 1996 and December 1996 for upgradient monitoring wells MW-1 and MW-3, indicates that sodium was below the tolerance limits. However, the tolerance limits for sodium were exceeded in MW-10, a monitoring well downgradient of former Area 317 Surface Impoundment, for these same reports. The June 1994 water quality parameter report reveals a detection of lead at 4.9 mg/l in MW-3.

The last annual monitoring report indicated that the direction of groundwater flow was to the northeast for that reporting period. Historically, the direction of groundwater flow has been reported as being to the northwest. This is a significant change. Further evaluation is needed to determine the cause of the change in direction of flow (i.e., seasonal fluctuations, effects of pumping, etc.) which may entail more frequent gauging of the wells. The monitoring network needs to be evaluated to determine if additional monitoring wells are needed to adequately monitor contaminant migration.

Monthly reports submitted to DTSC describe all activities at the site including activities at the former Area 317 surface impoundment.

Anticipated Events Next Quarter

Whittaker will collect samples from the groundwater monitoring wells in accordance with the approved Closure Plan.